

3. Plaintiff seeks past and future damages and prejudgment and post-judgment interest for Defendant's infringement of the Asserted Patents, as defined below.

II. PARTIES

4. Plaintiff Smart Path is a limited liability company organized and existing under the law of the State of Delaware, with its principal place of business located at 601 Quail Valley Drive, Georgetown, TX 78626.

5. Smart Path is the owner of the entire right, title, and interest of the Asserted Patents, as defined below.

6. Adtran, Inc. ("Adtran") is a Delaware corporation with its principal place of business at 901 Explorer Boulevard, Huntsville, Alabama 35806. Adtran may be served through its registered agent CT Corporation System, 1999 Bryan Street, Suite 900, Dallas, Texas 75201. On information and belief, Adtran is registered to do business in the State of Texas and has been since at least November 26, 1987.

III. JURISDICTION AND VENUE

7. This is an action for patent infringement which arises under the patent laws of the United States, in particular, 35 U.S.C. §§ 271, 281, 283, 284, and 285.

8. This Court has exclusive jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331 and 1338(a).

9. This Court has personal jurisdiction over Adtran in this action because Adtran has committed acts within the Western District of Texas giving rise to this action and has established minimum contacts with this forum such that the exercise

of jurisdiction over Adtran would not offend traditional notions of fair play and substantial justice. Defendant Adtran, directly and/or through subsidiaries or intermediaries (including distributors, retailers, and others), has committed and continues to commit acts of infringement in this District by, among other things, offering to sell and selling products and/or services that infringe the Asserted Patents. Moreover, Adtran is registered to do business in the State of Texas, has offices and facilities in the State of Texas, and actively directs its activities to customers located in the State of Texas.

10. Venue is proper in this district under 28 U.S.C. §§ 1391(b)–(d) and 1400(b). Defendant Adtran is registered to do business in the State of Texas, has offices in the State of Texas, and upon information and belief, has transacted business in the Western District of Texas and has committed acts of direct and indirect infringement in the Western District of Texas. ADTRAN maintains a regular and established place of business in the Western District of Texas, including through a third-party agent Palco Telecom Service, Inc. in El Paso, Texas, through ADTRAN's representatives and/or technicians that can be onsite anywhere within the Western District of Texas within four hours for its service plan customers, through its employee's residence in the Western District of Texas based on the fact that ADTRAN holds the residence out as its own, and through the ongoing representations ADTRAN has made about its presence in the Western District of Texas.

IV. COUNTS OF PATENT INFRINGEMENT

11. Plaintiff alleges that Defendant has infringed and continues to infringe the following United States patents (collectively, the “Asserted Patents”):

United States Patent No. 7,386,010 (the “’010 Patent”) (Exhibit A)
United States Patent No. 7,463,580 (the “’580 Patent”) (Exhibit B)
United States Patent No. 7,551,599 (the “’599 Patent”) (Exhibit C)
United States Patent No. 7,697,525 (the “’525 Patent”) (Exhibit D)

COUNT ONE INFRINGEMENT OF U.S. PATENT 7,386,010

12. Plaintiff incorporates by reference the allegations in all preceding paragraphs as if fully set forth herein.

13. The ’010 Patent, entitled “Multiprotocol media conversion,” was filed on June 13, 2003 and issued on June 10, 2008.

14. Plaintiff is the assignee and owner of all rights, title and interest to the ’010 Patent, including the right to recover for past infringements, and has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

Technical Description

15. The ’010 Patent addresses problems in the prior art of “providing different types of Layer 2 network service over a common packet network infrastructure.” 1:12-14.

16. The ’010 discloses a solution to this problem in which “interworking of Layer 2 services enables endpoints using disparate protocols to communicate with one another over the same VPN.” 1:62-64.

Direct Infringement

17. Defendant, without authorization or license from Plaintiff, has been and is directly infringing the '010 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271, including through making, using (including for testing purposes), importing, selling and offering for sale telecommunications equipment that infringes one or more claims of the '010 Patent. Defendant develops, designs, manufactures, and distributes telecommunications equipment that infringes one or more claims of the '010 Patent. Defendant further provides services that practice methods that infringe one or more claims of the '010 Patent. Defendant is thus liable for direct infringement pursuant to 35 U.S.C. § 271. Exemplary infringing instrumentalities include Adtran Total Access 5000, and all other substantially similar products (collectively the "010 Accused Products").

18. Smart Path names this exemplary infringing instrumentality to serve as notice of Defendant's infringing acts, but Smart Path reserves the right to name additional infringing products, known to or learned by Smart Path or revealed during discovery, and include them in the definition of '010 Accused Products.

19. Defendant is liable for direct infringement pursuant to 35 U.S.C. § 271 for the manufacture, sale, offer for sale, importation, or distribution of Defendant's Total Access 5000.

20. Defendant's Total Access 5000 is a non-limiting example of an apparatus that meets all limitations of claim 1 of the '010 Patent, either literally or equivalently.

21. The Total Access 5000 is an apparatus for data communications.

Total Access 5000 Series



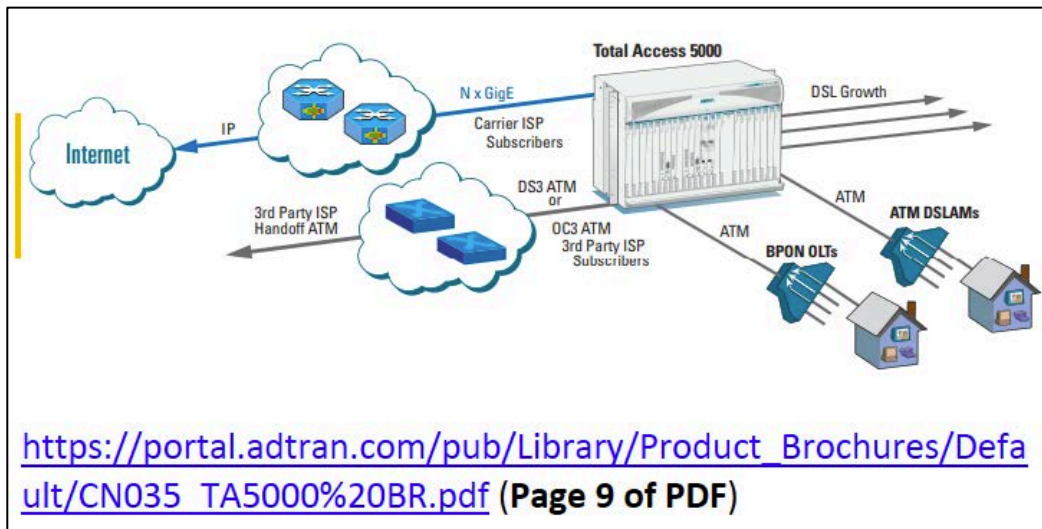
The Total Access 5000 (ADTRAN 5000) Series of Multi-Service Access Nodes (MSAN) provides unmatched deployment flexibility while providing the widest range of next generation 10G FTTH and vectored DSL services on the market. With modules available in front access and rear access (where applicable), the ability to use the same modules, and by using I/O Modules to create a

flexible and extensible backplane, the ADTRAN 5000 Series provides cost efficiencies with wiring, warehousing, and spare units.

The ADTRAN 5000 Series chassis provides four packaging options for unparalleled deployment flexibility for either ANSI or ETSI operating environments. Various accessories are also available to enhance deployment.

<https://portal.adtran.com/web/page/portal/Adtran/group/4282>

22. The Total Access 5000 comprises a hub, comprising a plurality of ports, which are configured to receive and transmit data frames in accordance with a packet-oriented Layer 2 communication protocol.



23. The Total Access 5000 comprises a plurality of edge devices, each such edge device comprising: at least one network port for communicating with the ports of the

hub via a network in accordance with the packet-oriented Layer 2 communication protocol.

Benefits

- Native Ethernet core
- ATM and Ethernet network interfaces
- Copper and fibre transport and access
- Fully redundant, carrier-class design
- Digital and metallic test access
- Multiple network management capabilities with full FCAPS support
- ERPS and RPR Ethernet Ring support
- Supported by ADTRAN AOE Service Management

Interfaces

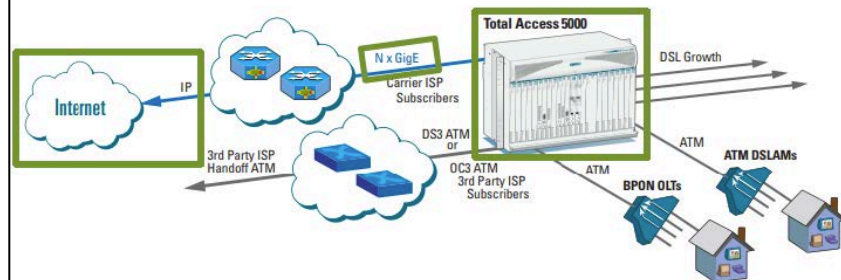
- Transport: Ethernet, ATM
- Physical: SFP, 72-Pin High Density FCI
- Connector for most modules

https://portal.adtran.com/pub/Library/Data_Sheets/International_I61188001_G1-8%20TA5000%20ETSI.pdf (Pages 1 and 2 of PDF)

Evolving the ATM Network

ADTRAN's Total Access 5000/5006 is the key to solving the puzzle of ATM to Ethernet migration for residential services. Along with the ability to aggregate ATM DS3, OC-3 and T1 IMA in a pure ATM application, the Total Access 5000 provides the ability to interwork incoming ATM traffic from existing ATM DSLAMs and switch it to an Ethernet network via N x GigE interfaces.

- Maximize product lifecycle of existing legacy ATM DSLAMs
 - ◆ leverage already-installed base
 - ◆ maximize return on investment
- Provide ubiquitous migration strategy to next-generation IP/Ethernet core
 - ◆ same for all vendors — DSL or BPON
 - ◆ low impact to existing network
- Edge aggregation and interworking
 - ◆ minimize impact on existing inter-office transport
 - ◆ allow higher-speed service offerings



https://portal.adtran.com/pub/Library/Product_Brochures/Default/CN035_TA5000%20BR.pdf

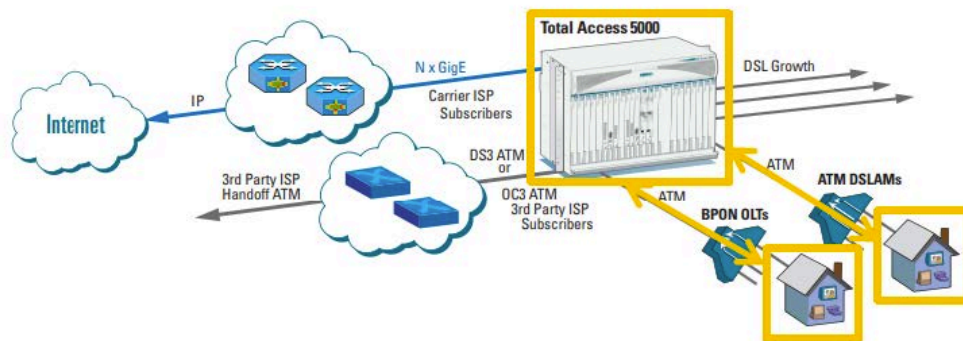
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24. The Total Access 5000 comprises one or more native interfaces, for communicating with client nodes in accordance with respective native Layer 2 protocols, at least one of which is different from the packet-oriented Layer 2 communication protocol.

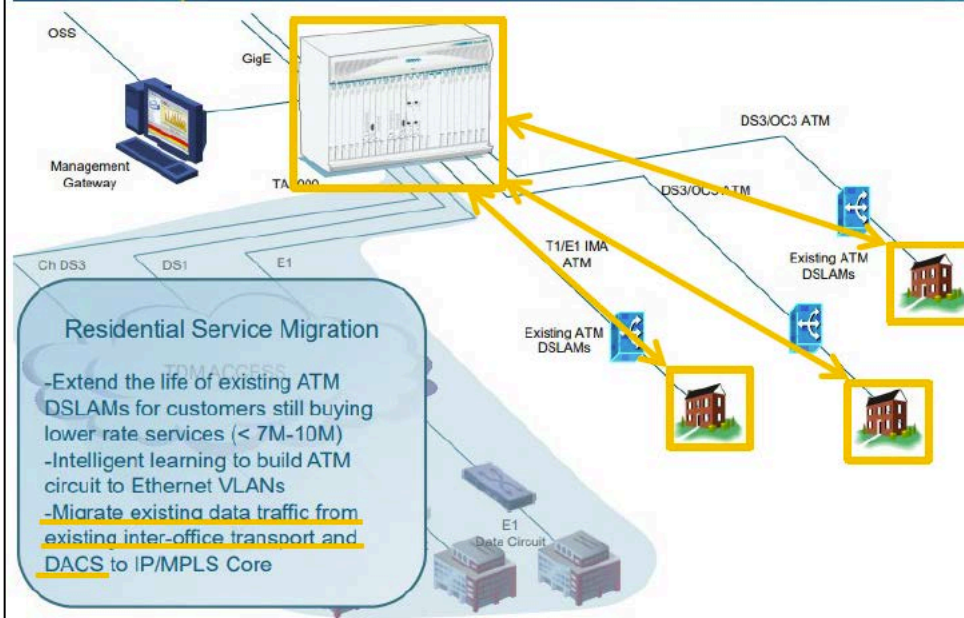
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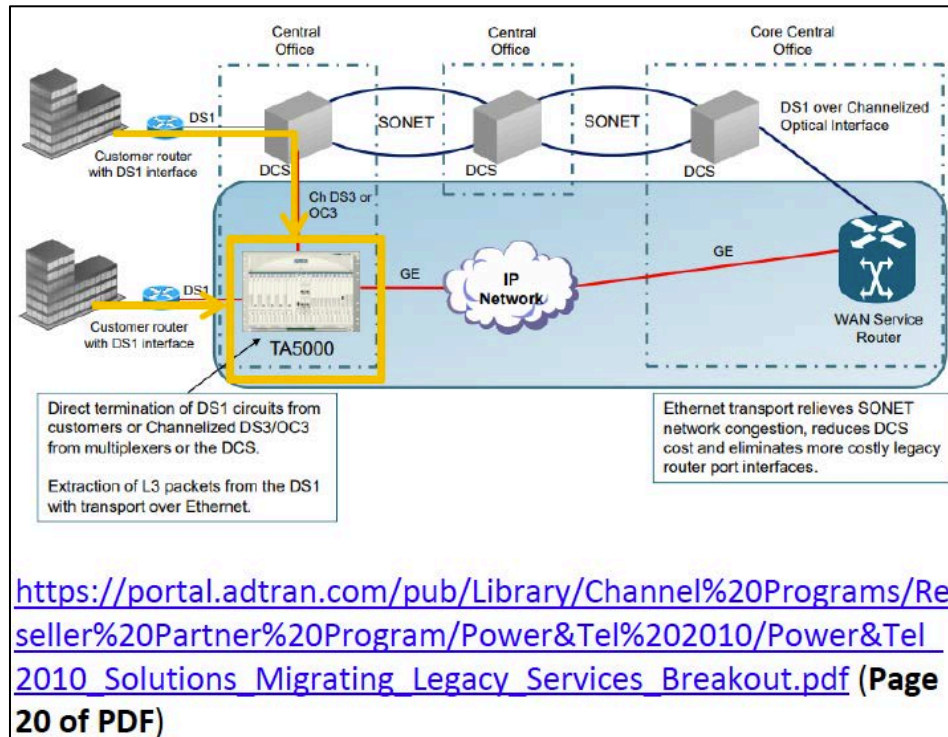
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(Page9 of PDF)



[https://portal.adtran.com/pub/Library/Channel%20Programs/Reseller%20Partner%20Program/Power&Tel%202010/Power&Tel%202010 Solutions Migrating Legacy Services Breakout.pdf](https://portal.adtran.com/pub/Library/Channel%20Programs/Reseller%20Partner%20Program/Power&Tel%202010/Power&Tel%202010%20Solutions%20Migrating%20Legacy%20Services%20Breakout.pdf) (Page 7 of PDF)



25. The Total Access 5000 comprises a protocol converter, which is configured to convert the data frames received on the one or more native interfaces from at least a first format specified by the native Layer 2 protocols to a second format specified by the packet-oriented Layer 2 communication protocol, so as to transmit the data frames in the second format via the at least one network port, and to convert the data frames received on the at least one network port from the second format to at least the first format, so as to transmit the data frames in at least the first format via the one or more native interfaces.

Key services supported are:

- FTTH/FTTP
 - GPON
 - XGS-PON/NG-PON2
 - Active Ethernet
- Packet Optical Transport
 - Ethernet over DWDM
 - Ethernet over OTN
 - Nx100G ERPS
- Broadband Digital Loop Carrier
 - ADSL2+ Combo
 - VDSL2+ Combo
 - VoIP
 - GR303
 - TR08 (Mode 1 and Mode 2)
- High Density DSLAM
 - ADSL2+
 - VDSL2 17A, 35B
 - System Level Vectoring
- Legacy Service Migration
 - SONET/SDH over OTN
 - ATM Aggregation and Interworking
 - PPP/MLPPP
 - Frame Relay
- Carrier Ethernet
 - EoCu
 - EoTDM
 - EoFiber

<https://portal.adtran.com/web/page/portal/Adtran/group/4282>

Overview

The ADTRAN Total Access 5000 is a carrier class multi-service access and aggregation platform that bridges the gap between the existing and the next-generation networks.

With a pure Ethernet core, the Total Access 5000 supports both legacy and emerging service interfaces over copper and fibre, easily scaling to support even the most bandwidth-intensive applications. The Total Access 5000 provides a clear migration path for traditional services, like voice, through its flexible network uplink options, including support for both TDM and VoIP switches.

In addition to supporting both legacy and next-generation access interfaces, the Ethernet core of the Total Access 5000 provides a scalable and cost-optimised aggregation point in the network, with interfaces ranging from E1 to 10 and 20 Gigabit Ethernet.

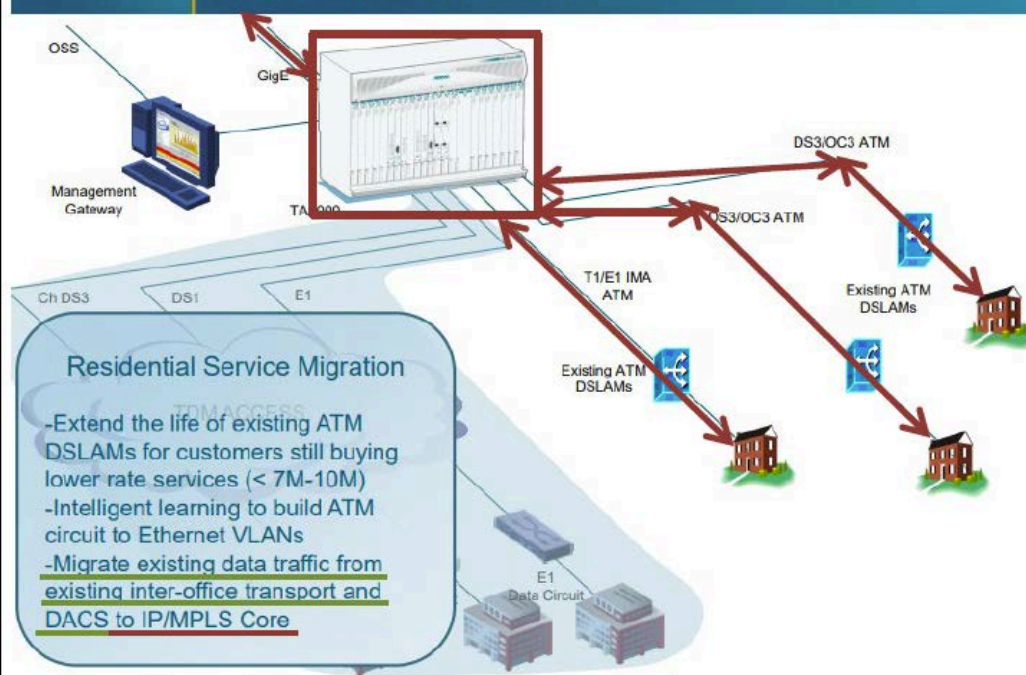
https://portal.adtran.com/pub/Library/Data_Sheets/International/_/I61188001G1-8%20TA5000%20ETSI.pdf (Page 1 of PDF)

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ADTRAN's Total Access 5000/5006 is the key to solving the puzzle of ATM to Ethernet migration for residential services. Along with the ability to aggregate ATM DS3, OC-3 and T1 IMA in a pure ATM application, the Total Access 5000 provides the ability to interwork incoming ATM traffic from existing ATM DSLAMs and switch it to an Ethernet network via N x GigE interfaces.

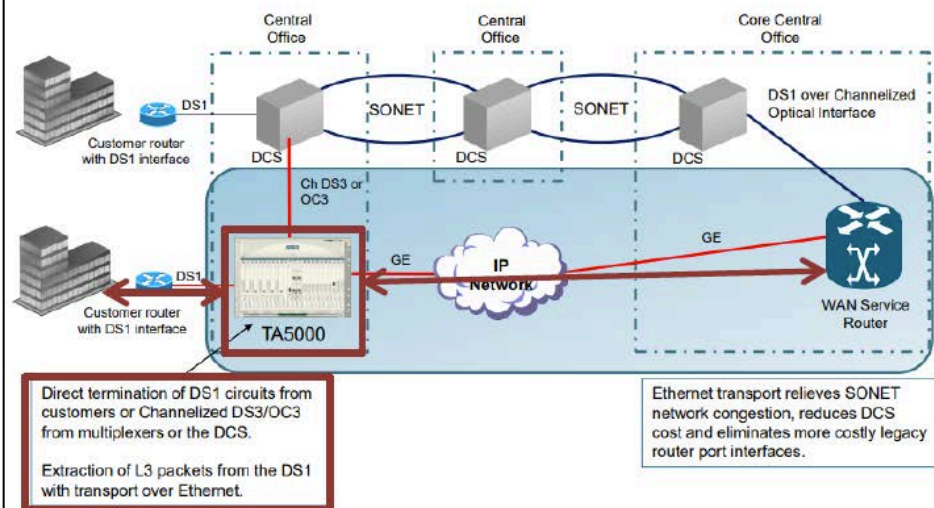
https://portal.adtran.com/pub/Library/Product_Brochures/Default/CN035_TA5000%20BR.pdf
(Page 9 of PDF)

Migration of Legacy Services to Ethernet Residential Customers



<https://portal.adtran.com/pub/Library/Channel%20Programs/Reseller%20Partner%20Program/Power&Tel%202010/Power&Tel%202010%20Solutions%20Migrating%20Legacy%20Services%20Breakout.pdf> (Page 7 of PDF)

- Application - Total Access 5000 serving as a TDM aggregation hub to migrate these services to their IP infrastructure.
- Traditional business services
 - Primarily targeted at existing full rate TDM services
 - Migration of Point-to-Point (PPP) or Frame Relay circuits
 - Edge interworking into more efficient Ethernet
- Total Access 5000 will reduce embedded costs for legacy services
 - Leverage TA5000 investment in the network
 - Minimize DCS, SONET transport IOF and Router port CAPEX
 - Maximize use of the emerging IP network
- A single platform serving all Business needs [EoX to PPP/MLPPP/FR]



<https://portal.adtran.com/pub/Library/Channel%20Programs/Reseller%20Partner%20Program/Power&Tel%202010/Power&Tel%202010%20Solutions%20Migrating%20Legacy%20Services%20Breakout.pdf> (Pages 19 and 20 of PDF)

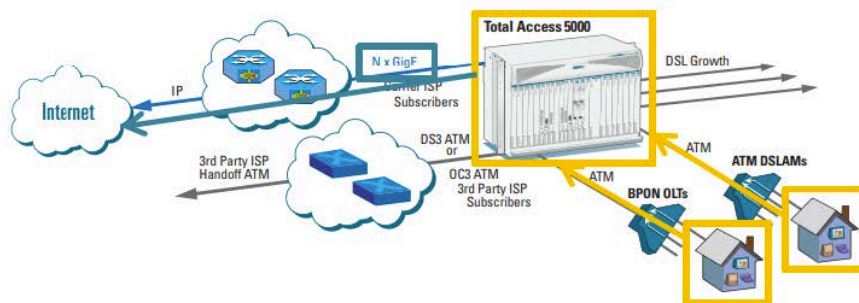
26. The Total Access 5000 comprises edge devices configured to direct the data frames received from two or more of the native interfaces to one of the ports of the hub, and to map the two or more of the native interfaces to different, respective

Virtual Local Area Networks (VLANs) on the network, such that the at least one network port comprises an Ethernet port, and such that the one or more native interfaces comprise at least one of a time domain multiplexed (TDM) interface and a serial interface.

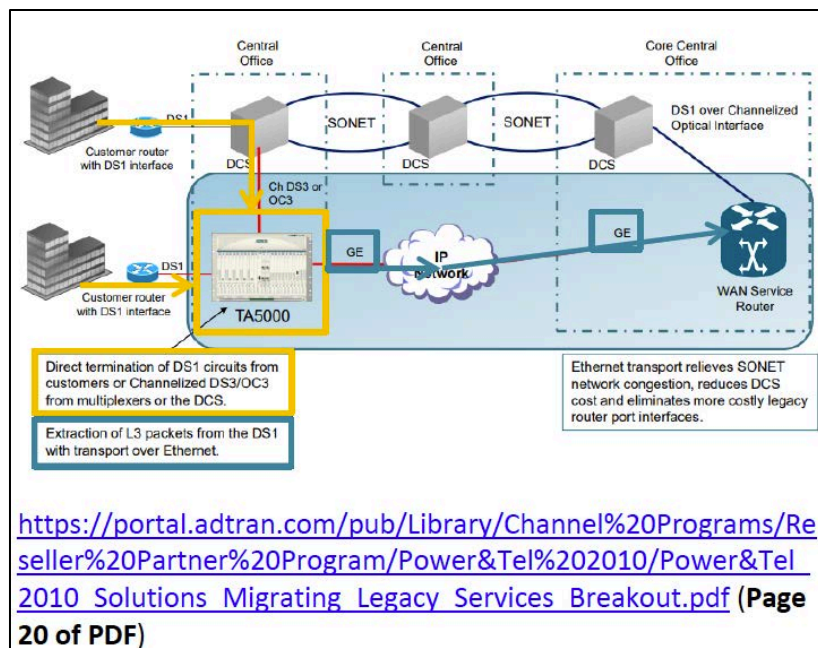
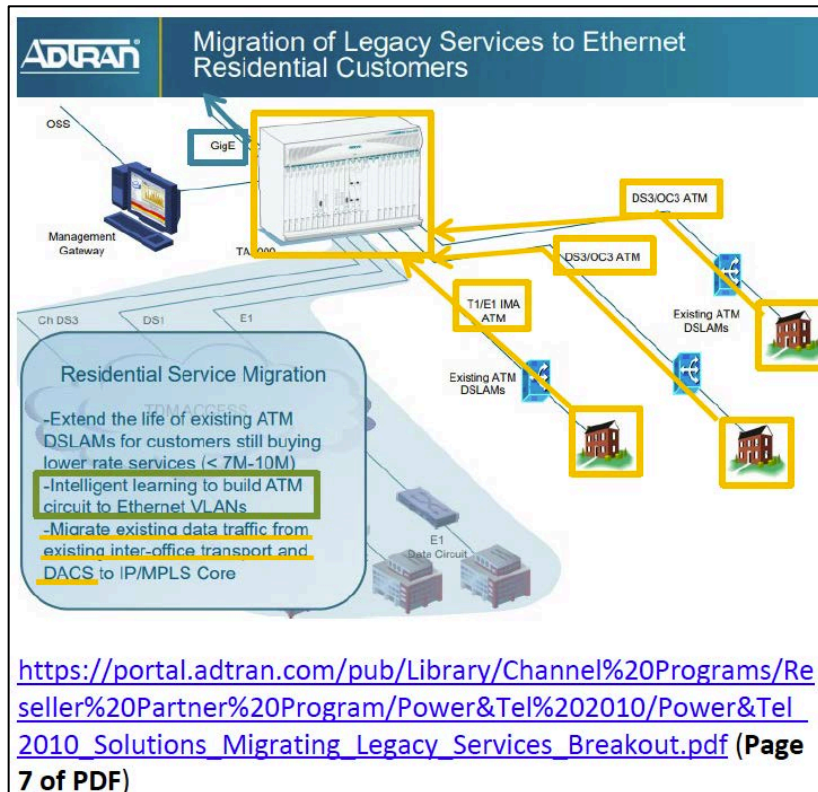
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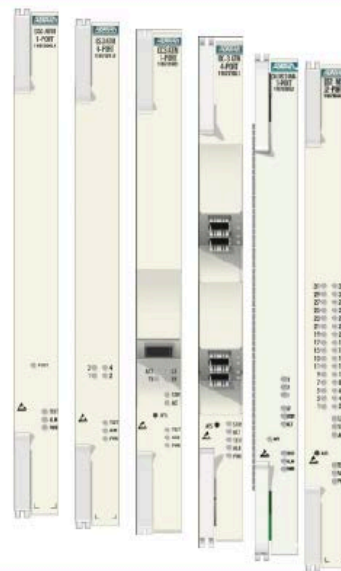
ATM Aggregation and Interworking

- OC3, DS3, and IMA ATM Aggregation
- Remote DSLAM Management
- xDSL Growth
- Simultaneous ATM and Ethernet Network Interfaces (if required)
- Retain legacy CPE
 - PPPoA to oE conversion
- Support for up to 24k PVCs
- **VP to VLAN “switched model”**
- LLC Auto-Sense Detection
- Per VC granularity
 - Mapped to stacked VLAN tags
- Now supported in RTs !



ATM Aggregation and Interwork Modules

- ATM Aggregation
 - ATM DS3 4-Port: Up to 84 DS3s
 - ATM OC3 4-Port: Up to 84 OC3s
 - Optionally Redundant
- ATM DS1 Aggregation
 - 32-Port DS1 IMA, 1187803G1
 - Up to 640 DS1s per system
 - 3p Channelized DS3 IMA, 1187220G2
 - Up to 1680 DS1s per system
 - Optionally Redundant
- ATM Uplinks
 - ATM DS3 and OC-3/STM-1 Single Port
 - Optionally redundant



Willful Infringement

27. On May 9, 2017 and October 2, 2017 Orckit IP LLC sent letters to Defendant (“Notice Letters”), which informed Defendant of the Asserted Patents.

28. Defendant has had actual knowledge of the ’010 Patent and its infringement thereof at least as of receipt of the Notice Letters.

29. Defendant has had actual knowledge of the ’010 Patent and its infringement thereof at least as of service or other receipt of Plaintiff’s Complaint.

30. Defendant’s infringement of the Asserted Patents was either known or was so obvious that it should have been known to Defendant.

31. Notwithstanding this knowledge, Defendant has knowingly or with reckless disregard infringed the ’010 Patent. Defendant continued to commit acts of infringement despite being on notice of an objectively high likelihood that its actions constituted infringement of Plaintiff’s valid patent rights, either literally or equivalently.

32. Defendant is therefore liable for willful infringement. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

33. Defendant has induced and is knowingly inducing its distributors, testers, trainers, customers and/or end users to directly infringe the ’010 Patent, with the specific intent to induce acts constituting infringement, and knowing that the induced acts constitute patent infringement, either literally or equivalently.

34. Defendant has knowingly contributed to direct infringement by its customers and end users by having imported, sold, and/or offered for sale, and knowingly importing, selling, and/or offering to sell within the United States the accused products which are not suitable for substantial non-infringing use and which are especially made or especially adapted for use by its customers in an infringement of the asserted patent.

35. Defendant's indirect infringement includes, for example, providing data sheets, technical guides, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '010 Patent, including:

- <https://portal.adtran.com/web/page/portal/Adtran/group/4282>
- https://portal.adtran.com/pub/Library/Data_Sheets/International_/I61188001_G1-8%20TA5000%20ETSI.pdf
- https://portal.adtran.com/pub/Library/Product_Brochures/Default/CN035_TA_5000%20BR.pdf
- https://portal.adtran.com/pub/Library/Channel%20Programs/Reseller%20Partner%20Program/Power&Tel%202010/Power&Tel_2010_Solutions_Migrating_Legacy_Services_Breakout.pdf

36. Defendant's indirect infringement additionally includes marketing its products for import by its customers into the United States. Defendant's indirect infringement further includes providing application notes instructing its customers on infringing uses of the '010 Accused Products. The '010 Accused Products are designed in such a way that when they are used for their intended purpose, the user infringes the '010 Patent, either literally or equivalently. Defendant knows and

intends that customers who purchase the '010 Accused Products will use those products for their intended purpose. For example, Defendant's United States website, <https://www.adtran.com>, instructs customers to use the '010 Accused Products in numerous infringing applications. Defendant's customers directly infringe the '010 patent when they follow Defendant's provided instructions on website, videos, and elsewhere. Defendant's customers who follow Defendant's provided instructions directly infringe claims of the '010 Patent.

37. In addition, Defendant specifically intends that its customers, such as United States distributors, retailers and consumer product companies, will import, use, and sell infringing products in the United States to serve and develop the United States market for Defendant's infringing products. Defendant knows that following its instructions directly infringes claims of the '010 Patent, including for example Claim 14.

38. As a result of Defendant's infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT TWO
INFRINGEMENT OF U.S. PATENT 7,463,580

39. Plaintiff incorporates by reference the allegations in preceding paragraphs 1-11 as if fully set forth herein.

40. The '580 Patent, entitled "Resource sharing among network tunnels" was filed on December 15, 2005 and issued on December 9, 2008.

41. Plaintiff is the assignee and owner of all rights, title and interest to the '580 Patent, including the right to recover for past infringements, and has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

Technical Description

42. The '580 Patent addresses problems in the art of Multiprotocol label switching (MPLS), specifically that “tunnel-oriented resource reservation protocols such as RSVP-TE and CR-LDP cited above are typically unable to share resources among communication paths, such as protected paths (except for resource sharing between different instances of the same path, which are not considered to be separate communication paths in this context).” 2:22-27.

43. The '580 Patent discloses that, “[t]he methods and systems described hereinbelow enable resource allocations in network segments and network elements to be shared between two or more communication paths, thus overcoming these shortcomings of the prior art.” 2:27-31.

Direct Infringement

44. Defendant, without authorization or license from Plaintiff, has been and is directly infringing the '580 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271, including through making, using (including for testing purposes), importing, selling and offering for sale telecommunications equipment that infringes one or more claims of the '580 Patent. Defendant develops, designs, manufactures, and distributes telecommunications equipment that infringes one or more claims of the '580 Patent. Defendant further provides services that practice

methods that infringe one or more claims of the '580 Patent. Defendant is thus liable for direct infringement pursuant to 35 U.S.C. § 271. Exemplary infringing instrumentalities include Adtran Total Access 5000, and all other substantially similar products (collectively the "580 Accused Products").

45. Smart Path names this exemplary infringing instrumentality to serve as notice of Defendant's infringing acts, but Smart Path reserves the right to name additional infringing products, known to or learned by Smart Path or revealed during discovery, and include them in the definition of '580 Accused Products.

46. Defendant is liable for direct infringement pursuant to 35 U.S.C. § 271 for the manufacture, sale, offer for sale, importation, or distribution of Defendant's Total Access 5000.

47. Defendant's Total Access 5000 is a non-limiting example of an apparatus that meets all limitations of claim 8 of the '580 Patent, either literally or equivalently.

48. The Total Access 5000 is a network element.

Total Access 5000 Series



The Total Access 5000 (ADTRAN 5000) Series of Multi-Service Access Nodes (MSAN) provides unmatched deployment flexibility while providing the widest range of next generation 10G FTTH and vectored DSL services on the market. With modules available in front access and rear access (where applicable), the ability to use the same modules, and by using I/O Modules to create a

flexible and extensible backplane, the ADTRAN 5000 Series provides cost efficiencies with wiring, warehousing, and spare units.

The ADTRAN 5000 Series chassis provides four packaging options for unparalleled deployment flexibility for either ANSI or ETSI operating environments. Various accessories are also available to enhance deployment.

ADTRAN 5000 is an ideal solution for revitalizing existing cabinet infrastructure to deploy higher-bandwidth, next-generation services easily and cost effectively.

<https://portal.adtran.com/web/page/portal/Adtran/group/4282>

49. The Total Access 5000 comprises a network interface for communicating with other elements in a communication network.

Front Panel Interfaces

- Eight 1/2.5/10 GigE Interfaces (SFP+ cages)
- Two 1/2.5 GigE Interfaces (SFP cages)
- Every port is either Network NNI or Customer NNI configurable
- 1GBASE-T/10GBASE-T (SFP/SFP+) supported for RJ45 copper connections
- Support either 10 Gbps or 1 Gbps ITU-T G.8032v2 Ethernet Ring Protection Switching (ERPS)

Wavelength-Division Multiplexing Interfaces

- Dense WDM support (DWDM)
 - ◆ The High Speed (HS) 10 Gig SFP+ and the Mid Speed (MS) GE SPF interfaces support 44/88 DWDM wavelengths for interfacing the optical DWDM layer and delivery of high bit rate multi wavelengths network connection
- Coarse WDM support (CWDM)
 - ◆ The Mid Speed (MS) GE SFP interfaces support eight CWDM wavelengths for interfacing the optical WDM layer and delivery of multi wavelengths over a single fiber

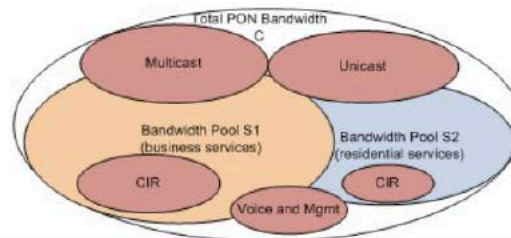
https://portal.adtran.com/pub/Library/Data_Sheets/Default_Public/61174130F2-8%20TA5000%20ETOS-10.pdf (Page 2 of PDF)

50. The Total Access 5000 comprises a processor, which is arranged to accept, via the network interface, a notification distributed over the communication network of an affiliation with a resource-sharing group of at least first and second tunnels, which have respective origin network elements and termination network elements and which traverse different routes through the network.

The ADTRAN® Total Access® 5000 offers a versatile Carrier Ethernet Transport Optical Switch (ETOS) as part of the Optical Networking Edge (ONE™) product line. The addition of the ETOS-10 module to the ADTRAN Total Access 5000 allows service providers the ability to deliver and aggregate both 1 GigE and 10 GigE carrier-grade services. Services which can then be transported on a per wavelength basis, using only a single fiber uplink to aggregate and transport multiple services whether for residential triple play, mobile backhaul or business Ethernet services. The core Ethernet features of this product include a flexible Ethernet processor and a leading density of 10 Gigabit Ethernet SFP+ standard or DWDM fiber interfaces. The ETOS-10 supports flexible traffic management; Ethernet flow mapping, prioritization, tagging; and versatile management options which are required to respond to the demand for premium services.

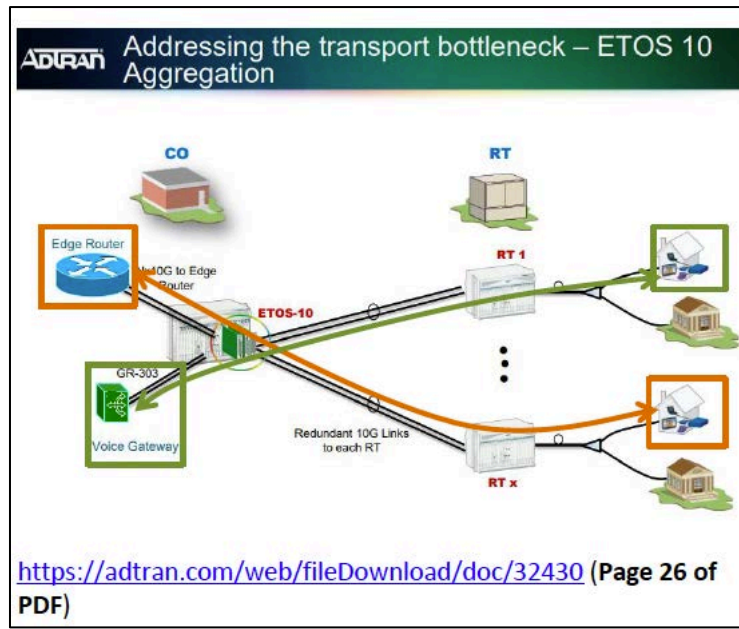
https://portal.adtran.com/pub/Library/Data_Sheets/Default_Public/61174130F2-8%20TA5000%20ETOS-10.pdf (Page 1 of PDF)

- Advanced Dynamic Bandwidth Allocation (DBA)
 - *Intelligent oversubscription*
 - *Pools of separate bandwidth for business and residential*
 - *Dedicated video pool and CIR*
 - *DBA across the PON – across the card – across the system*
- Flexibility provided by ADTRAN FPGA architecture



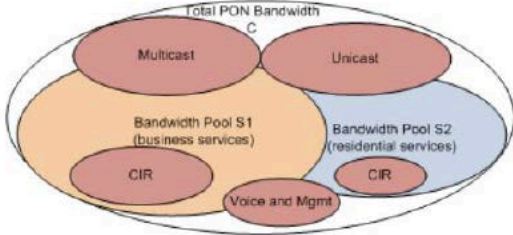
<https://adtran.com/web/fileDownload/doc/32430> (Page 19 of PDF)

51. The Total Access 5000 comprises tunnels meeting at least one condition selected from a group of conditions consisting of: the respective origin network elements of the first and second tunnels are different; and the respective termination network elements of the first and second tunnels are different.



52. The Total Access 5000 comprises a call admission control (CAC) module, which is arranged, when the network element is traversed by at least some of the tunnels in the resource-sharing group, to allocate a resource associated with the network element so as to share an allocation of the resource among the at least some of the tunnels responsively to the notification.

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 - *DBA across the PON – across the card – across the system*
- Flexibility provided by ADTRAN FPGA architecture



The diagram illustrates the bandwidth allocation within a PON. A large outer oval is labeled 'Total PON Bandwidth C'. Inside this oval, there are two main colored regions: an orange region on the left labeled 'Bandwidth Pool S1 (business services)' and a blue region on the right labeled 'Bandwidth Pool S2 (residential services)'. Within the orange region, there are two smaller red ovals labeled 'Multicast' and 'CIR'. Within the blue region, there are two smaller red ovals labeled 'Unicast' and 'CIR'. A small red oval labeled 'Voice and Mgmt' is positioned at the bottom center, overlapping the boundary between the two main pools.

<https://adtran.com/web/fileDownload/doc/32430> (Page 19 of PDF)

Willful Infringement

53. Defendant has had actual knowledge of the '580 Patent and its infringement thereof at least as of receipt of the Notice Letters.

54. Defendant has had actual knowledge of the '580 Patent and its infringement thereof at least as of service or other receipt of Plaintiff's Complaint.

55. Defendant's infringement of the Asserted Patents was either known or was so obvious that it should have been known to Defendant.

56. Notwithstanding this knowledge, Defendant has knowingly or with reckless disregard infringed the '580 Patent. Defendant continued to commit acts of infringement despite being on notice of an objectively high likelihood that its actions constituted infringement of Plaintiff's valid patent rights, either literally or equivalently.

57. Defendant is therefore liable for willful infringement. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

58. Defendant has induced and is knowingly inducing its distributors, testers, trainers, customers and/or end users to directly infringe the '580 Patent, with the specific intent to induce acts constituting infringement, and knowing that the induced acts constitute patent infringement, either literally or equivalently.

59. Defendant has knowingly contributed to direct infringement by its customers and end users by having imported, sold, and/or offered for sale, and knowingly importing, selling, and/or offering to sell within the United States the accused products which are not suitable for substantial non-infringing use and which are especially made or especially adapted for use by its customers in an infringement of the asserted patent.

60. Defendant's indirect infringement includes, for example, providing data sheets, technical guides, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '580 Patent, including:

- <https://portal.adtran.com/web/page/portal/Adtran/group/4282>
- https://portal.adtran.com/pub/Library/Data_Sheets/Default_Public/61174130_F2-8%20TA5000%20ETOS-10.pdf
- https://adtran.com/pub/Library/Data_Sheets/International_/I61187503F1-8_TA5000%20GPON%20Octal%20OLT.pdf
- <https://adtran.com/web/fileDownload/doc/32430>

- [https://adtran.com/pub/Library/White Papers/MGCP and SIP White Paper Rev A .pdf](https://adtran.com/pub/Library/White%20Papers/MGCP%20and%20SIP%20White%20Paper%20Rev%20A.pdf)

61. Defendant's indirect infringement additionally includes marketing its products for import by its customers into the United States. Defendant's indirect infringement further includes providing application notes instructing its customers on infringing uses of the '580 Accused Products. The '580 Accused Products are designed in such a way that when they are used for their intended purpose, the user infringes the '580 Patent, either literally or equivalently. Defendant knows and intends that customers who purchase the '580 Accused Products will use those products for their intended purpose. For example, Defendant's United States website, <https://www.adtran.com>, instructs customers to use the '580 Accused Products in numerous infringing applications. Defendant's customers directly infringe the '580 patent when they follow Defendant's provided instructions on website, videos, and elsewhere. Defendant's customers who follow Defendant's provided instructions directly infringe claims of the '580 Patent.

62. In addition, Defendant specifically intends that its customers, such as United States distributors, retailers and consumer product companies, will import, use, and sell infringing products in the United States to serve and develop the United States market for Defendant's infringing products. Defendant knows following its instructions directly infringes claims of the '580 Patent, including for example Claim 1.

63. As a result of Defendant's infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such

infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT THREE
INFRINGEMENT OF U.S. PATENT 7,551,599

64. Plaintiff incorporates by reference the allegations in preceding paragraphs 1-11 as if fully set forth herein.

65. The '599 Patent, entitled "Layer-3 network routing with RPR layer-2 visibility" was filed on March 29, 2004 and issued on June 23, 2009.

66. Plaintiff is the assignee and owner of all rights, title and interest to the '599 Patent, including the right to recover for past infringements, and has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

Technical Description

67. The '599 Patent addresses technical problems in the prior art, including that "[c]urrently, layer-3 routing protocols, such as RIP and OSPF, are unaware of the topology of layer-2 RPR networks with which they must interact. A routing table allows the router to forward packets from source to destination via the most suitable path, i.e., lowest cost, minimum number of hops. The routing table is updated via the routing protocol, which dynamically discovers currently available paths. The routing table may also be updated via static routes, or can be built using a local interface configuration, which is updated by the network administrator. However, the RPR ingress and egress nodes chosen in the operation of automatic routing protocols do not take into account the internal links within the RPR ring, and may therefore cause

load imbalances within the RPR subnet, which generally results in suboptimum performance of the larger network.” 3:65-4:12.

68. To address these issues, the ’599 Patent discloses “methods and systems are provided for the manipulation of layer-3 network nodes, external routers, routing tables and elements of layer-2 ring networks, such as RPR networks, enabling the layer-3 elements to view the topology of a layer-2 ring subnet. This feature permits routers to choose optimal entry points to the layer-2 subnet for different routes that pass into or through the layer-2 subnet. This enables virtual tunnels or routing paths to utilize all existing entry links to the subnet and to minimize cost factors, such as the number of spans required to traverse the subnet from the entry point to a destination node of the subnet.” 4:17-27.

Direct Infringement

69. Defendant, without authorization or license from Plaintiff, has been and is directly infringing the ’599 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271, including through making, using (including for testing purposes), importing, selling and offering for sale methods, devices, and networks infringing one or more claims of the ’599 Patent. Defendant develops, designs, manufactures, and distributes telecommunications equipment that infringes one or more claims of the ’599 Patent. Defendant further provides services that practice methods that infringe one or more claims of the ’465 Patent. Defendant is thus liable for direct infringement pursuant to 35 U.S.C. § 271. Exemplary infringing

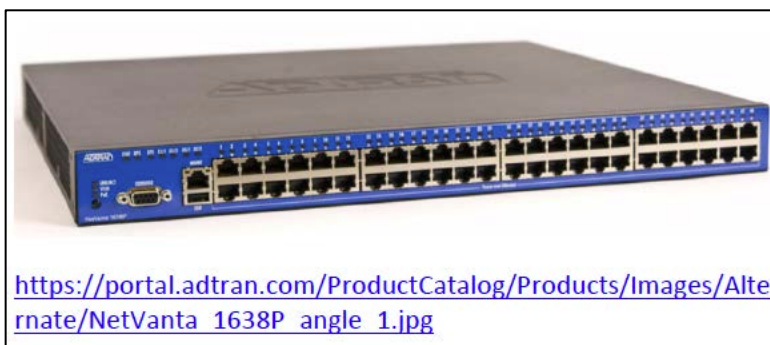
instrumentalities include Adtran {complete}, and all other substantially similar products (collectively the “’599 Accused Products”).

70. Smart Path names these exemplary infringing instrumentalities to serve as notice of Defendant’s infringing acts, however Smart Path reserves the right to name additional infringing products, known to or learned by Smart Path or revealed during discovery, and include them in the definition of ’599 Accused Products.

71. Defendant is liable for direct infringement pursuant to 35 U.S.C. § 271 for the use, manufacture, sale, offer of sale, importation, or distribution of Defendant’s Adtran NetVanta 1638P with ActivChassis Multi-Layer Gigabit PoE Ethernet Switch.

72. Defendant’s Adtran NetVanta 1638P is a non-limiting example of a an ethernet switch that meets all limitations of claim 32 of the ’599 Patent, either literally or equivalently.

73. The Adtran NetVanta 1638P comprises a network routing system for obtaining ingress from an external layer-3 network to a layer-2 ring network to reach nodes thereof.



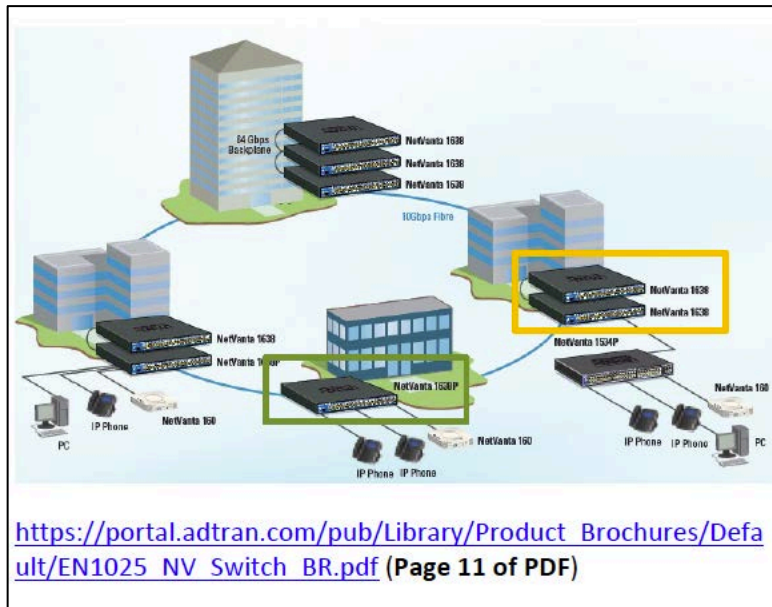
https://portal.adtran.com/ProductCatalog/Products/Images/Alternate/NetVanta_1638P_angle_1.jpg

Multi-layer Switching

The NetVanta 1638P supports advanced multi-layer (Layer 2 and Layer 3) switching. It supports static routes, RIP V1/V2, OSPF, Border Gateway Protocol (BGP) and Virtual Router Redundancy Protocol (VRRP), allowing it to easily scale from small businesses to enterprise-sized networks.

<https://portal.adtran.com/pub/Library/Data Sheets/International /I64700569F1-8 NV1638P.pdf> (Pages 1 and 2 of PDF)

74. The Adtran NetVanta 1638P comprises first routers disposed in ingress nodes of said ring network, said first routers being configured for creating entries in a host table, each of said entries comprising an address of a respective one of said nodes of said ring network and a metric.



75. The Adtran NetVanta 1638P comprises first routers disposed in ingress nodes of said ring network, said first routers being configured for creating entries in a host table, each of said entries comprising an address of a respective one of said nodes of said ring network and a metric.

BGP Overview

BGP is an Exterior Gateway Protocol (EGP) that is used within the Internet and multinational organizations. EGP is one of two different types of dynamic routing protocols. The other protocol is Interior Gateway Protocol (IGP). The difference between the two protocols is that IGPs (for example, Routing Information Protocol (RIP), Open Shortest Path First (OSPF)) operate within an autonomous system (AS), whereas EGPs allow routes to be exchanged between different autonomous systems. Typically, an AS is defined by the boundaries of an organization. As an EGP, BGP routers must regulate traffic between networks controlled by organizations with different policies. BGP is designed to allow administrators to customize policies for route exchange. The following are some characteristics of BGP that make it an appropriate protocol for connecting different autonomous systems:

- BGP can filter both the routes it receives and those that it sends according to bit length, thereby minimizing the number of routes exchanged.
- BGP uses policies to determine best routes rather than per-hop counts used in RIP or link states used in OSPF. Each AS can set their own policy.
- BGP routers communicate only with manually configured neighbors.
- You can configure different policies for route exchange with different neighbors.

BGP Advantages

Static routing, OSPF, and RIP are simple to configure, have low overhead, and are well suited for medium-to-small networks. However, BGP offers several advantages, particularly in more complex environments:

- Unlike routers using static routing, routers running BGP can automatically respond to connections that are down and changes in network topology. Multiple protocol layer switching (MPLS) networks allow an organization to change its IP addressing scheme without notifying the service provider.

<https://supportcommunity.adtran.com/jmaxz83287/attachments/jmaxz83287/nv-aos/10/1/Configuring%20BGP%20in%20AOS%20for%20Releases%20Prior%20to%2018.03.00%20and%20R10.1.0.pdf> (Page 2 of PDF)

76. The Adtran NetVanta 1638P comprises first routers being further configured for uploading said host table to external elements of a data network that interfaces with said ring network via said ingress nodes.

Step 2: Advertise Local Networks

Specify the local networks that remote sites should be able to access. Only networks that originate within the local AS should be advertised. The following command is used from the BGP Configuration mode to allow BGP to advertise a network:

```
(config-bgp)#network <ipv4 address> mask <subnet mask>
```

<ipv4 address> Specifies the IPv4 network address for the neighbor that AOS will advertise over BGP. IPv4 addresses should be expressed in dotted decimal notation (for example, 10.10.10.0).

<subnet mask> Specifies the subnet mask that corresponds to a range of IPv4 addresses (network) or a specific host. Subnet masks can be expressed in dotted decimal notation (for example, 255.255.255.0).

For example, to advertise the private network 10.1.10.0 255.255.255.0, enter:

```
(config-bgp)#network 10.1.10.0 mask 255.255.255.0
```

BGP is a classless protocol. Therefore, networks with variable length subnet masks can be specified. BGP can send out a route summary for the entire range of local subnets. For example, a customer's site includes 16 /24 networks from 10.1.0.0 /24 to 10.1.15.0 /24, which together make up network 10.1.0.0 /20. You can specify the entire range of subnets by entering:

```
(config-bgp)#network 10.1.0.0 mask 255.255.240.0
```

Since the BGP router is advertising a route, it searches its routing table for a route to the specified networks. It then sends this route to all authorized neighbors.

<https://supportcommunity.adtran.com/jmaxz83287/attachments/jmaxz83287/nv-aos/10/1/Configuring%20BGP%20in%20AOS%20for%20Releases%20Prior%20to%2018.03.00%20and%20R10.1.0.pdf> (Page 9 of PDF)

77. The Adtran NetVanta 1638P comprises a second router disposed in at least one of said external elements, said second router being configured for defining paths from said external elements to designated ones of said nodes of said ring network, each of said paths leading through a selected one of said ingress nodes responsively to said metric.

NetVanta 1534P

Layer 3 Lite Gigabit Ethernet Switch

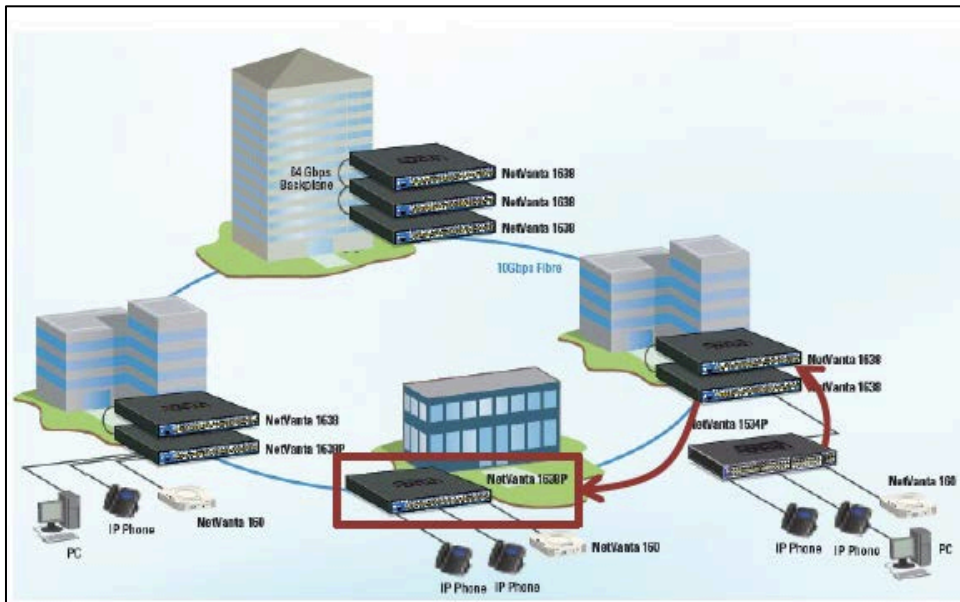
The NetVanta® 1534P is a managed, 28-port PoE, Layer 3 Lite, Gigabit Ethernet switch designed for fast, secure, cost-effective Local Area Network (LAN) switching. This scalable, full-featured business-class switch is perfect for higher-bandwidth Voice over IP (VoIP) applications needing PoE to power IP Phones, as well as Gigabit-to-the-desktop deployments. Experience the ease of management with an easy-to-use Web-based Graphical User Interface (GUI) and familiar Command Line Interface (CLI).

Layer 3 Support

- 16 Static Routes
- 8 Layer 3 Interfaces
- UDP Relay
- 232 ARP Entries
- IPv6 Management

https://portal.adtran.com/pub/Library/Data_Sheets/Default_Public/61702591G2-8%20NV1534P.pdf (Pages 1 and 2 of PDF)

78. The Adtran NetVanta 1638P transmitting data from network elements that are external to said ring network to at least one of said nodes via a selected one of said paths.



https://portal.adtran.com/pub/Library/Product_Brochures/Default/EN1025_NV_Switch_BR.pdf (Page 11 of PDF)

BGP Attributes

BGP attributes are properties that are used to determine the best route to a destination when multiple paths exist to a single destination. An understanding of how BGP attributes influence route selection is important when designing networks.

The following BGP attributes are supported by AOS:

- LOCAL_PREF
- MULTI_EXIT_DISC or MED
- Origin
- AS_PATH
- NEXT_HOP
- Community

<https://supportcommunity.adtran.com/jmaxz83287/attachments/jmaxz83287/nv-aos/10/1/Configuring%20BGP%20in%20AOS%20for%20Releases%20Prior%20to%2018.03.00%20and%20R10.1.0.pdf> (Page 4 of PDF)

Defining Routes and Attributes to Advertise Outbound or Filter Inbound

The advertisements sent from a BGP interface to a neighbor or received by a BGP interface from a neighbor can be controlled according to the route's:

- IPv4 Network address and prefix length
- AS path
- Community
- Metric

Routes that the BGP interface will advertise outbound or filter inbound are selected by entering a **match** command in a route map entry. The difference between an inbound filter and an outbound filter is seen when the route map is applied to a BGP neighbor as an **inbound** policy rather than an **outbound** policy. Refer to *Applying a Route Map Entry to a BGP Neighbor on page 30*. For a list of available filtering options for BGP, see *Table 3 on page 24*.

Table 3. Defining Routes to Be Filtered

Filtering According To	Command Syntax
IPv4 Network address and/or prefix length	match ip address prefix-list <name>
IPv4 ACL	match ip address <ipv4 acl name>
AS_PATH	match as-path <name>
Community	match community <name> exact-match
Metric	match metric <value>

If an attribute is to be applied to the route, then a **set** command must be entered in addition to the **match** command. Attributes are applied to the routes selected by the **match** command. The following attributes can be applied to inbound filtered or outbound advertised routes:

- Community
- Prepend AS path
- MED metric
- Local preference
- Delete a community list

<https://supportcommunity.adtran.com/jmaxz83287/attachments/jmaxz83287/nv-aos/10/1/Configuring%20BGP%20in%20AOS%20for%20Releases%20Prior%20to%2018.03.00%20and%20R10.1.0.pdf> (Page 24 of PDF)

Willful Infringement

79. Defendant has had actual knowledge of the '599 Patent and its infringement thereof at least as of receipt of the Notice Letters.

80. Defendant has had actual knowledge of the '599 Patent and its infringement thereof at least as of service or other receipt of Plaintiff's Complaint.

81. Defendant's risk of infringement of the Asserted Patents was either known or was so obvious that it should have been known to Defendant.

82. Notwithstanding this knowledge, Defendant has knowingly or with reckless disregard willfully infringed the '599 Patent. Defendant has thus had actual notice of the infringement of the '599 Patent and acted despite an objectively high likelihood that its actions constituted infringement of Plaintiff's valid patent rights, either literally or equivalently.

83. This objective risk was either known or so obvious that it should have been known to Defendant. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

84. Defendant has induced and is knowingly inducing its customers and/or end users to directly infringe the '599 Patent, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement, either literally or equivalently.

85. Defendant has knowingly contributed to direct infringement by its customers by having imported, sold, and/or offered for sale, and knowingly importing, selling, and/or offering to sell within the United States the '599 Accused Products which are not suitable for substantial non-infringing use and which are especially made or especially adapted for use by its customers in an infringement of the asserted patent.

86. Defendant's indirect infringement includes, for example, providing data sheets, technical guides, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '599 Patent, for example:

- https://portal.adtran.com/ProductCatalog/Products/Images/Alternate/NetVanta_1638P_angle_1.jpg
- https://portal.adtran.com/pub/Library/Data_Sheets/International_I64700569_F1-8_NV1638P.pdf
- https://portal.adtran.com/pub/Library/Data_Sheets/Default_Public/61702591_G2-8%20NV1534P.pdf
- <https://supportcommunity.adtran.com/jmaxz83287/attachments/jmaxz83287/nv-aos/10/1/Configuring%20BGP%20in%20AOS%20for%20Releases%20Prior%20to%2018.03.00%20and%20R10.1.0.pdf>
- https://portal.adtran.com/pub/Library/Product_Brochures/Default/EN1025_N_V_Switch_BR.pdf

87. Defendant's indirect infringement additionally includes marketing its products for import by its customers into the United States. Defendant's indirect infringement further includes providing application notes instructing its customers on infringing uses of the accused products. The '599 Accused Products are designed in such a way that when they are used for their intended purpose, the user infringes the '599 Patent, either literally or equivalently. Defendant knows and intends that customers who purchase the '599 Accused Products will use those products for their intended purpose. For example, Defendant's United States website <https://www.adtran.com>, instructs customers to use the '599 Accused Products in numerous infringing applications. Defendant's customers directly infringe the '599

Patent when they follow Defendant's provided instructions on its website, videos, and elsewhere. Defendant's customers who follow Defendant's provided instructions directly infringe claims 1 – 16, 47 – 58, and 83 – 84 of the '599 Patent.

88. In addition, Defendant specifically intends that its customers, such as United States distributors, retailers and consumer product companies, will import, use, and sell infringing products in the United States to serve and develop the United States market for Defendant's infringing products.

89. As a result of Defendant's infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

COUNT FOUR
INFRINGEMENT OF U.S. PATENT 7,697,525

90. Plaintiff incorporates by reference the allegations in preceding paragraphs 1-11 as if fully set forth herein.

91. The '525 Patent, entitled "Forwarding multicast traffic over link aggregation ports" was filed on December 21, 2006 and issued on April 13, 2010.

92. Plaintiff is the assignee and owner of all rights, title and interest to the '525 Patent, including the right to recover for past infringements, and has the legal right to enforce the patent, sue for infringement, and seek equitable relief and damages.

Technical Description

93. The '525 Patent provides a solution to the problems in the prior art as follows, "[u]nlike some known methods and systems in which all multicast packets are sent

to the same LAG group port, the methods and systems described herein distribute multicast packets approximately evenly among the different output ports of the LAG group. Thus, the traffic load within the group is balanced, and distribution of additional unicast traffic across the group is simplified.” 3:54-60.

Direct Infringement

94. Defendant, without authorization or license from Plaintiff, has been and is directly infringing the '525 Patent, either literally or equivalently, as infringement is defined by 35 U.S.C. § 271, including through making, using (including for testing purposes), importing, selling and offering for sale methods, devices, and networks infringing one or more claims of the '525 Patent. Defendant develops, designs, manufactures, and distributes telecommunications equipment that infringes one or more claims of the '525 Patent. Defendant further provides services that practice methods that infringe one or more claims of the '525 Patent. Defendant is thus liable for direct infringement pursuant to 35 U.S.C. § 271. Exemplary infringing instrumentalities include Adtran NetVanta 1544 Layer 3 Gigabit Ethernet Switch, and all other substantially similar products (collectively the “'525 Accused Products”).

95. Smart Path names this exemplary infringing instrumentality to serve as notice of Defendant's infringing acts, but Smart Path reserves the right to name additional infringing products, known to or learned by Smart Path or revealed during discovery, and include them in the definition of '525 Accused Products.

96. Defendant is liable for direct infringement pursuant to 35 U.S.C. § 271 for the use, manufacture, sale, offer of sale, importation, or distribution of Defendant's {complete}.

97. Defendant's Adtran NetVanta 1544 is a non-limiting example of an ethernet that meets all limitations of claim 1 of the '525 Patent, either literally or equivalently.

98. The Adtran NetVanta 1544 comprises a network node in a communication network.



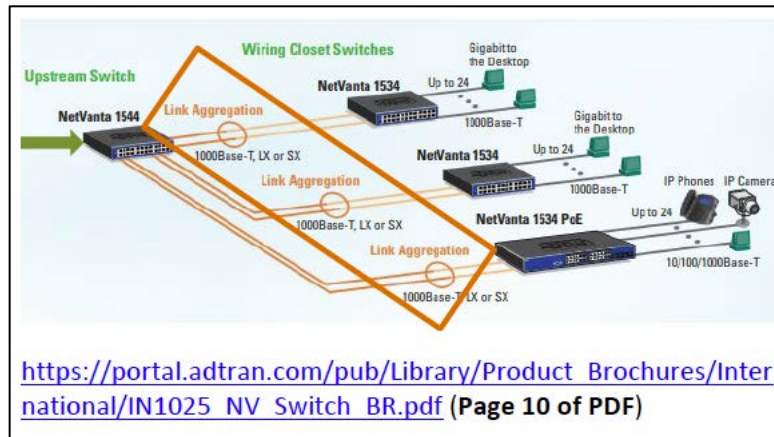
99. The Adtran NetVanta 1544 comprises a plurality of ports, at least a subset of which is grouped in a link aggregation group (LAG).

Link Aggregation

ADTRAN AOS supports Link Aggregation, which is defined in IEEE 802.3ad, and allows switches to aggregate Ethernet ports between ADTRAN switches or other switch manufacturers that conform to the 802.3ad specification. Link Aggregation allows you to bundle multiple Ethernet ports to form a single logical channel. An ADTRAN switch can support up to 6 channel groups; each of which can contain up to 8 ports per. This is beneficial in two ways: increased link capacity and providing for redundancy.

When configuring Link Aggregation, all ports within the group must be configured with the same speed and duplex (Link Aggregation only works on FULL duplex). A port cannot belong to more than one channel group at the same time. Load balancing is supported across multiple channel groups.

<https://supportforums.adtran.com/docs/DOC-3485>



100. The Adtran NetVanta 1544 comprises packet processing logic, which is coupled to receive data packets having respective destination addresses that specify forwarding the packets to groups of multiple recipients through at least one of the ports and to process the data packets so as to forward only a single copy of each of the data packets via the output ports in the subset, while distributing forwarded copies of the data packets among the output ports in the subset so as to balance a traffic load within the LAG group.

NetVanta 1544

Layer 3 Gigabit Ethernet Switch

NetVanta 1544 is a managed, 28-port, Layer 3, Gigabit Ethernet switch designed as an access layer or network backbone switch for Small to Medium-sized Enterprises (SMEs). With the combination of the advanced multi-layer switching fabric, high-bandwidth capabilities, and enhanced Quality of Service (QoS) features, the NetVanta 1544 is ideal in Gigabit-to-the-desktop deployments, and converged voice and data networks.

https://portal.adtran.com/pub/Library/Data Sheets/International /I61702544G1-8_NV1544.pdf (Page 1 of PDF)

Link Aggregation

ADTRAN AOS supports Link Aggregation, which is defined in IEEE 802.3ad, and allows switches to aggregate Ethernet ports between ADTRAN switches or other switch manufacturers that conform to the 802.3ad specification. Link Aggregation allows you to bundle multiple Ethernet ports to form a single logical channel. An ADTRAN switch can support up to 6 channel groups; each of which can contain up to 8 ports per. This is beneficial in two ways: increased link capacity and providing for redundancy.

When configuring Link Aggregation, all ports within the group must be configured with the same speed and duplex (Link Aggregation only works on FULL duplex). A port cannot belong to more than one channel group at the same time. Load balancing is supported across multiple channel groups.

<https://supportforums.adtran.com/docs/DOC-3485>

101. The Adtran NetVanta 1544 comprises packet processing logic arranged to allocate to each of the received data packets a fabric multicast identification (FMID) value selected from a range of possible FMID values, each FMID being associated with one of the ports in the subset, and to forward the single copy to the port associated with the allocated FMID value.

43.2.4 Frame Distributor

The Frame Distributor is responsible for taking outgoing frames from the MAC Client and transmitting them through the set of links that form the Link Aggregation Group. The Frame Distributor implements a distribution function (algorithm) responsible for choosing the link to be used for the transmission of any given frame or set of frames.

This standard does not mandate any particular distribution algorithm(s); however, any distribution algorithm shall ensure that, when frames are received by a Frame Collector as specified in 43.2.3, the algorithm shall not cause

- a) Mis-ordering of frames that are part of any given conversation, or
- b) Duplication of frames.

IEEE standard 802.3ad-2000 (Page 111)

43A.2 Port selection

A distribution algorithm selects the port used to transmit a given frame, such that the same port will be chosen for subsequent frames that form part of the same conversation. The algorithm may make use of information carried in the frame in order to make its decision, in combination with other information associated with the frame, such as its reception port in the case of a MAC Bridge.

The algorithm may assign one or more conversations to the same port, however, it must not allocate some of the frames of a given conversation to one port and the remainder to different ports. The information used to assign conversations to ports could include the following:

- a) Source MAC address
- b) Destination MAC address
- c) The reception port
- d) The type of destination address (individual or group MAC address)
- e) Ethernet Length/Type value (i.e., protocol identification)
- f) Higher layer protocol information (e.g., addressing and protocol identification information from the LLC sublayer or above)
- g) Combinations of the above

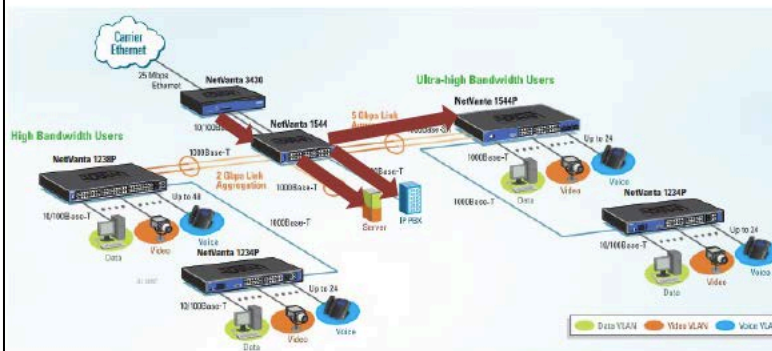
One simple approach applies a hash function to the selected information to generate a port number. This produces a deterministic (i.e., history independent) port selection across a given number of ports in an aggregation. However, as it is difficult to select a hash function that will generate a uniform distribution of load across the set of ports for all traffic models, it might be appropriate to weight the port selection in favor of ports that are carrying lower traffic levels. In more sophisticated approaches, load balancing is dynamic; i.e., the port selected for a given set of conversations changes over time, independent of any changes that take place in the membership of the aggregation.

IEEE standard 802.3ad-2000 (Page 170)

102. The Adtran NetVanta 1544 comprises multiple line cards connected to the ports and a switching fabric interconnecting the line cards, wherein, for each of the received data packets, a first line card connected to a first port via which the data packet is received is arranged to allocate the FMID value to the packet and to forward the packet to the switching fabric, and wherein the switching fabric and a second line card connected to a second port to which the data packet is to be sent are configured to forward the data packet responsively to the FMID value.

VLAN Switching and Inter-VLAN Routing

NetVanta switches provide managed switching features, like 802.1Q VLANs and VLAN trunking. VLANs provide logical segmentation of the network adding security and the separation of broadcast domains, which improves overall network performance. NetVanta switches can use the Gigabit Ethernet ports for uplink capability using 1000Base-T or optical connections using the Small Form factor Pluggable (SFP) modules for single-or multimode fibre applications. In addition, these Gigabit ports can be used for VLAN trunking to an upstream switch, link redundancy or to connect high-speed ports on servers or other devices.



[https://portal.adtran.com/pub/Library/Product Brochures/International/IN1025 NV Switch BR.pdf](https://portal.adtran.com/pub/Library/Product%20Brochures/International/IN1025%20NV%20Switch%20BR.pdf) (Page 6 of PDF)

43.2.4 Frame Distributor

The Frame Distributor is responsible for taking outgoing frames from the MAC Client and transmitting them through the set of links that form the Link Aggregation Group. The Frame Distributor implements a distribution function (algorithm) responsible for choosing the link to be used for the transmission of any given frame or set of frames.

This standard does not mandate any particular distribution algorithm(s); however, any distribution algorithm shall ensure that, when frames are received by a Frame Collector as specified in 43.2.3, the algorithm shall not cause

- a) Mis-ordering of frames that are part of any given conversation, or
- b) Duplication of frames.

IEEE standard 802.3ad-2000 (Page 111)

43A.2 Port selection

A distribution algorithm selects the port used to transmit a given frame, such that the same port will be chosen for subsequent frames that form part of the same conversation. The algorithm may make use of information carried in the frame in order to make its decision, in combination with other information associated with the frame, such as its reception port in the case of a MAC Bridge.

The algorithm may assign one or more conversations to the same port, however, it must not allocate some of the frames of a given conversation to one port and the remainder to different ports. The information used to assign conversations to ports could include the following:

- a) Source MAC address
- b) Destination MAC address
- c) The reception port
- d) The type of destination address (individual or group MAC address)
- e) Ethernet Length/Type value (i.e., protocol identification)
- f) Higher layer protocol information (e.g., addressing and protocol identification information from the LLC sublayer or above)
- g) Combinations of the above

One simple approach applies a hash function to the selected information to generate a port number. This produces a deterministic (i.e., history independent) port selection across a given number of ports in an aggregation. However, as it is difficult to select a hash function that will generate a uniform distribution of load across the set of ports for all traffic models, it might be appropriate to weight the port selection in favor of ports that are carrying lower traffic levels. In more sophisticated approaches, load balancing is dynamic; i.e., the port selected for a given set of conversations changes over time, independent of any changes that take place in the membership of the aggregation.

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103. The Adtran NetVanta 1544 comprises the first line card arranged to assign to the data packets line card FMID (LC-FMID) values selected from a first range of possible LC-FMID values, and wherein the switching fabric is arranged to map the LC-FMID values to respective central FMID (C-FMID) values selected from a second range of possible C-FMID values that is smaller than the first range and to forward the data packets responsively to the C-FMID values.

SFP Modules
1000Base-LX LC SFP Module
Part Number: 1200481E1
Provides 1000Base-LX Gigabit Ethernet interface for single-mode fiber
1000BaseT SFP Module
Part Number: 1200485G1
Supports 10/100/1000Base-T
2.5 Gigabit SFP Module
Part Number: 1200482G1
Provides 1 to 2.5 Gigabit SFP Ethernet interface for multi-mode fiber. NetVanta 1600 Series with Dual SFP+ XIM only supports 1Gbps.
2.5 Gigabit SFP Module
Part Number: 1200483G1
Provides 1 to 2.5 Gigabit SFP Ethernet interface for single-mode fiber. NetVanta 1600 Series with Dual SFP+ XIM only supports 1Gbps.

https://portal.adtran.com/web/appmanager/portal/Adtran?nfpb=true&partNumber=1702544G1&productGroupId=4412&selectTab=modules&pageLabel=waverunner_page_products_productdetail

43.2.4 Frame Distributor
The Frame Distributor is responsible for taking outgoing frames from the MAC Client and transmitting them through the set of links that form the Link Aggregation Group. The Frame Distributor implements a distribution function (algorithm) responsible for choosing the link to be used for the transmission of any given frame or set of frames.
This standard does not mandate any particular distribution algorithm(s); however, any distribution algorithm shall ensure that, when frames are received by a Frame Collector as specified in 43.2.3, the algorithm shall not cause
<ul style="list-style-type: none"> a) Mis-ordering of frames that are part of any given conversation, or b) <u>Duplication of frames.</u>
IEEE standard 802.3ad-2000 (Page 111)

Willful Infringement

104. Defendant has had actual knowledge the '525 Patent and its infringement thereof at least as of receipt of the Notice Letters.

105. Defendant has had actual knowledge of the '525 Patent and its infringement thereof at least as of service or other receipt of Plaintiff's Complaint.

106. Defendant's risk of infringement of the Asserted Patents was either known or was so obvious that it should have been known to Defendant.

107. Notwithstanding this knowledge, Defendant has knowingly or with reckless disregard willfully infringed the '525 Patent. Defendant has thus had actual notice of the infringement of the '525 Patent and acted despite an objectively high likelihood that its actions constituted infringement of Plaintiff's valid patent rights, either literally or equivalently.

108. This objective risk was either known or so obvious that it should have been known to Defendant. Accordingly, Plaintiff seeks enhanced damages pursuant to 35 U.S.C. §§ 284 and 285.

Indirect Infringement

109. Defendant has induced and is knowingly inducing its customers and/or end users to directly infringe the '525 Patent, with the specific intent to encourage such infringement, and knowing that the induced acts constitute patent infringement, either literally or equivalently.

110. Defendant has knowingly contributed to direct infringement by its customers by having imported, sold, and/or offered for sale, and knowingly importing, selling, and/or offering to sell within the United States the '525 Accused Products which are not suitable for substantial non-infringing use and which are especially

made or especially adapted for use by its customers in an infringement of the asserted patent.

111. Defendant's indirect infringement includes, for example, providing data sheets, technical guides, demonstrations, software and hardware specifications, installation guides, and other forms of support that induce its customers and/or end users to directly infringe the '525 Patent, for example:

- https://portal.adtran.com/ProductCatalog/Products/Images/Alternate/1702544G1_1.jpg
- <http://portal.adtran.com/pub/Library/Data Sheets/International /I61702544G1-8 NV1544.pdf>
- <https://portal.adtran.com/pub/Library/Product Brochures/International/IN1025 NV Switch BR.pdf>
- <https://supportforums.adtran.com/docs/DOC-3485>
- https://portal.adtran.com/web/appmanager/portal/Adtran? nfpb=true&partNumber=1702544G1&productGroupId=6&selectTab=modules&_pageLabel=waverunner_page_products_productdetail

112. Defendant's indirect infringement additionally includes marketing its products for import by its customers into the United States. Defendant's indirect infringement further includes providing application notes instructing its customers on infringing uses of the '525 Accused Products. The '525 Accused Products are designed in such a way that when they are used for their intended purpose, the user infringes the '525 Patent, either literally or equivalently. Defendant knows and intends that customers who purchase the '525 Accused Products will use those products for their intended purpose. For example, Defendant's United States website: <https://www.adtran.com>, instructs customers to use the '525 Accused

Products in numerous infringing applications. Defendant's customers directly infringe the '525 patent when they follow Defendant's provided instructions on website, videos, and elsewhere. Defendant's customers who follow Defendant's provided instructions directly infringe claims of the '525 Patent.

113. In addition, Defendant specifically intends that its customers, such as United States distributors, retailers and consumer product companies, will import, use, and sell infringing products in the United States to serve and develop the United States market for Defendant's infringing products. Defendant knows following its instructions directly infringes claims of the '525 Patent, including for example Claims 12 – 24.

114. Defendant's customers who follow Defendant's provided instructions directly infringe the method of claim 12 – 24 of the '525 Patent.

115. As a result of Defendant's infringement, Plaintiff has suffered monetary damages, and is entitled to an award of damages adequate to compensate it for such infringement which, by law, can be no less than a reasonable royalty, together with interest and costs as fixed by this Court under 35 U.S.C. § 284.

V. NOTICE

116. Smart Path has complied with the notice requirement of 35 U.S.C. § 287 and does not currently distribute, sell, offer for sale, or make products embodying the Asserted Patents. This notice requirement has been complied with by all relevant persons at all relevant times.

VI. JURY DEMAND

117. Plaintiff demands a trial by jury of all matters to which it is entitled to trial by jury, pursuant to FED. R. CIV. P. 38.

VII. PRAYER FOR RELIEF

WHEREFORE, Plaintiff prays for judgment and seeks relief against Defendant as follows:

- A. That the Court determine that one or more claims of each of the Asserted Patents is infringed by Defendant, both literally and under the doctrine of equivalents;
- B. That the Court determine that one or more claims of each of the Asserted Patents is indirectly infringed by Defendant;
- C. That the Court award damages adequate to compensate Plaintiff for the patent infringement that has occurred, together with prejudgment and post-judgment interest and costs, and an ongoing royalty for continued infringement;
- D. That the Court permanently enjoin Defendant pursuant to 35 U.S.C. § 283;
- E. That the Court find this case to be exceptional pursuant to 35 U.S.C. § 285;
- F. That the Court determine that Defendant's infringements were willful;
- G. That the Court award enhanced damages against Defendant pursuant to 35 U.S.C. § 284;
- H. That the Court award reasonable attorneys' fees; and
- I. That the Court award such other relief to Plaintiff as the Court deems just and proper.

Dated: April 5, 2021

Respectfully Submitted,

/s/ Bradley D. Liddle

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